Finely Crafted Architectural Box

Inspired by Frank Lloyd Wright

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This handsome box takes design inspiration from the low profiles and horizontal lines of Prairie School architecture, *left*. Careful machining and attention to detail will reward you with a truly unique tabletop creation.

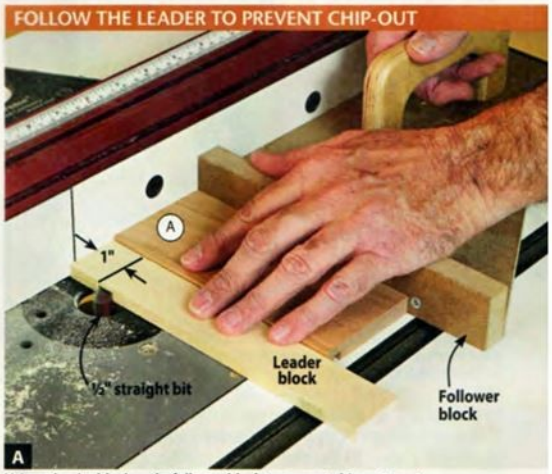
Build the base

1 To successfully complete the base, you'll need to carefully control the thickness of the sides (A) and feet (B). Start by installing a ½" straight bit into your table-mounted router, and rout a ¼"-deep dado in a piece of scrap to serve as a thickness guide. Then plane a ¾×3×30" blank for the sides and a ¾×1¾×15" blank for the feet and handle (I) [**Materials List**, *page 63*] using the dado in the scrap as a guide to ensure the finished ½" thickness. The parts should fit tightly in the dado. Finish-sanding will make room for glue and allow for a snug assembly after the parts are machined. Cut the foot blank into two 6"-long pieces, and set aside the remaining piece for the handle blank.

2 Cut the bottom (C) to size from ¼" plywood, and finish-sand it.

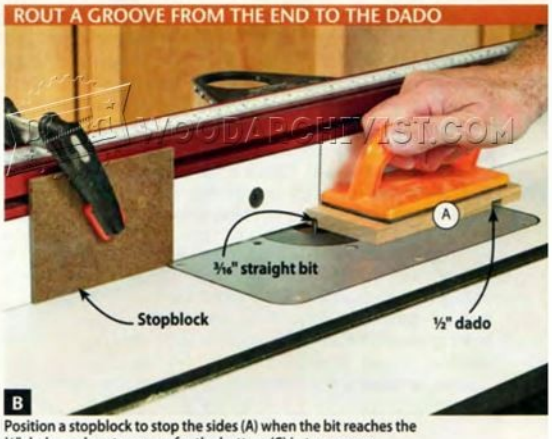
3 From the planed side blank, cut the sides (A) to their finished size. With the ½" straight bit in your table-mounted router, rout ¼"-deep dadoes [**Drawing 1**, **Photo A**]. Then switch to a 3/16" straight bit and rout a groove for the bottom (C) in each side [**Photo B**]. Make one pass ¼" from the bottom edge, reposition the fence, and make a second pass to match the thickness of the plywood bottom.

FOLLOW THE LEADER TO PREVENT CHIP-OUT



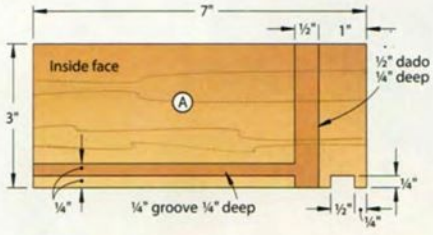
Using a leader block and a follower block to prevent chip-out, rout ¼"-deep dadoes in the sides (A).

ROUT A GROOVE FROM THE END TO THE DADO

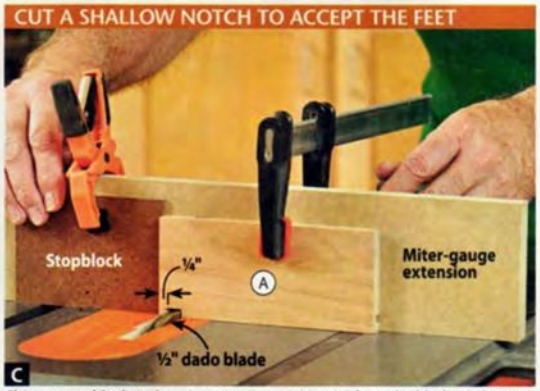


Position a stopblock to stop the sides (A) when the bit reaches the ½" dado, and rout grooves for the bottom (C) in two passes.

1 SIDES

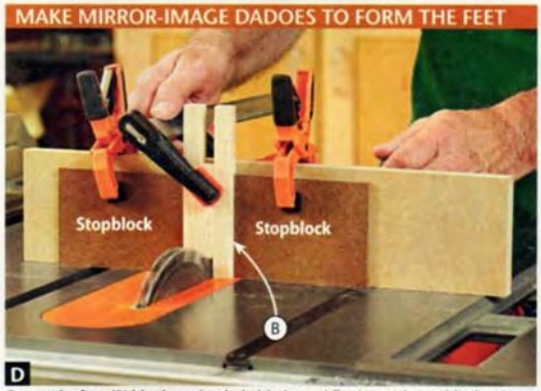


CUT A SHALLOW NOTCH TO ACCEPT THE FEET



Clamp a stopblock to the miter-gauge extension ¼" from the blade, and cut a ¼"-deep notch in each side (A).

MAKE MIRROR-IMAGE DADOES TO FORM THE FEET



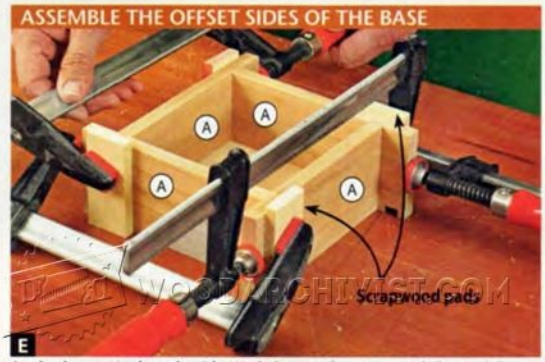
Center the foot (B) blank on the dado blade, and flank it with stopblocks. Cut one notch, flip the blank, and cut a second notch.

4 Install a ½" dado blade and a zero-clearance insert into your tablesaw. Cut a ¼"-deep dado in scrap and check the dado for a snug fit on the sides (A). Shim the dado blade as necessary. Attach an extension to the miter gauge so the blade will cut through it about 7" from the right end. (We used a ¾×4×18" piece of MDF.) Clamp a stopblock to the extension, and cut a ¼"-deep notch in the bottom edge of each side [**Drawing 1**, **Photo C**]. Finish-sand the sides.

5 Retrieve the two 6"-long foot (B) blanks. Raise the ½" dado blade to cut 2" deep, and notch both ends of each blank [**Drawing 2**, **Photo D**]. Then crosscut the feet to length and finish-sand them.

6 Glue and clamp the side (A) and bottom (C) assembly [**Drawing 2**, **Photo E**]. Check it for square. When the glue dries, apply glue sparingly to the inside surfaces of the foot (B) notches, and clamp them in place, interlocking the foot and side notches.

ASSEMBLE THE OFFSET SIDES OF THE BASE



Apply glue sparingly to the side (A), dadoes, and grooves, and glue and clamp the sides, capturing the bottom (C) within the grooves.

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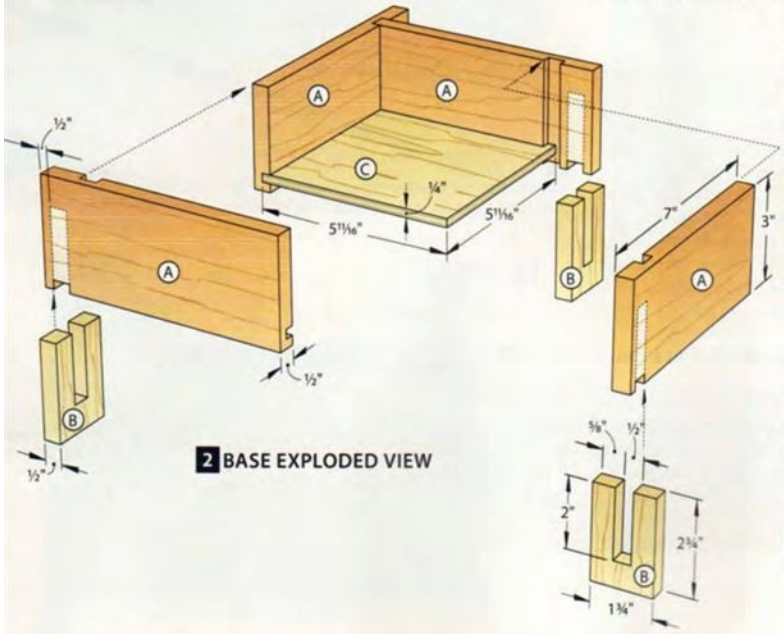
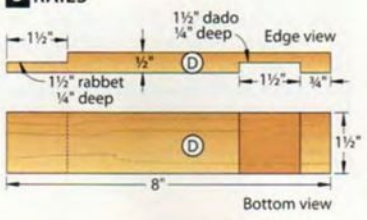


2 BASE EXPLODED VIEW

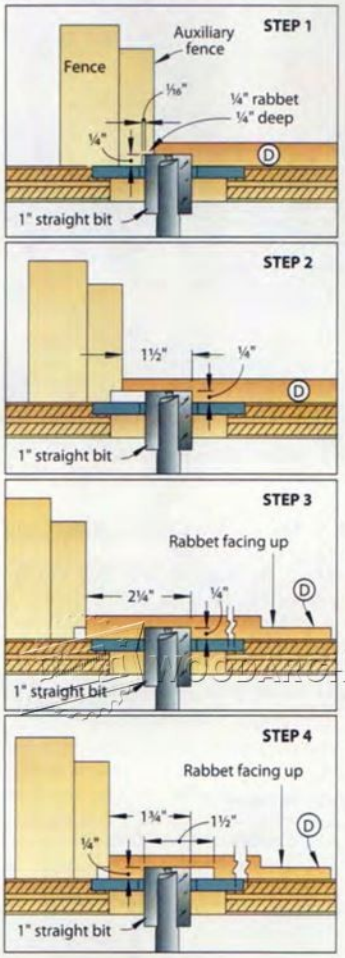
Make the lid parts

1 Cut the rails (D) to size, and finish-sand them. To test the router-table setups for cutting the rabbets and dadoes [**Drawing 3**], cut and finish-sand several extra parts from scrap. Chuck a 1" straight bit into your table-mounted router and adjust it to cut ¼" deep. Make test cuts to verify a cutting depth equal to one-half the thickness of the rails. Then to ensure a clean cut at the end of each rail rabbet, rout a ¼" rabbet ¼" deep along the edge of an auxiliary fence.

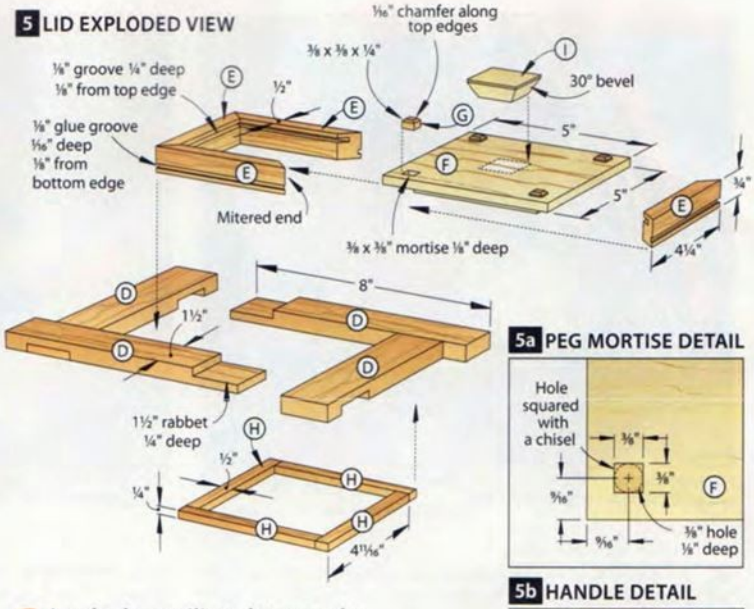
3 RAILS



4 MACHINING THE RAILS

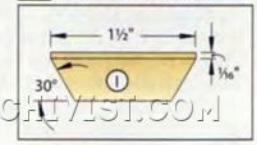


5 LID EXPLODED VIEW



5a PEG MORTISE DETAIL

5b HANDLE DETAIL



2 Attach the auxiliary fence to the router-table fence and position it so the auxiliary fence partially covers the router bit. Make the first cut on each rail and the test parts [**Drawing 4, Step 1**]. Use a follower block to keep the parts square to the fence and prevent chip-out. Reposition the fence, verify the setup with the scrap parts, and finish the rabbets [**Step 2**]. Move the fence, flip the parts over, and make the first cut to form the dadoes [**Step 3**]. Reposition the fence, test the setup, and finish the dadoes [**Step 4**].

3 Cut a ½x¾x18" blank for the risers (E). Cut a ⅛" groove ¼" deep ⅛" from the top edge into the inside face, and a ⅛" groove 1/16" deep ⅛" from the bottom edge into the outside face [**Drawing 5**]. Miter-cut the risers to length for a snug fit into the rail (D) frame opening.

4 Cut the panel (F) to size. To form mortises for the decorative pegs (G), drill ⅛"-deep holes with a Forstner bit and square them with a chisel [**Drawings 5** and **5a**]. To make perfectly placed, perfectly square mortises, see the **Shop Tip**, *below*.

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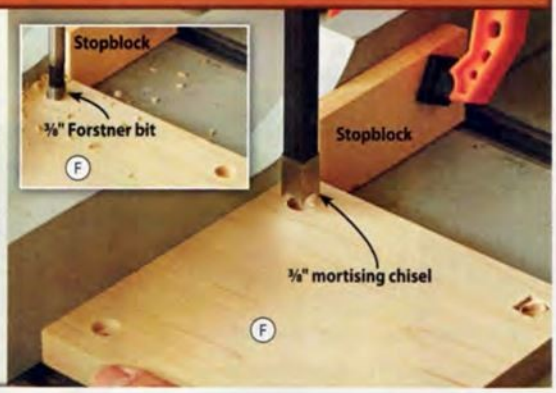
SHOP TIP

Make a perfect square from a round hole

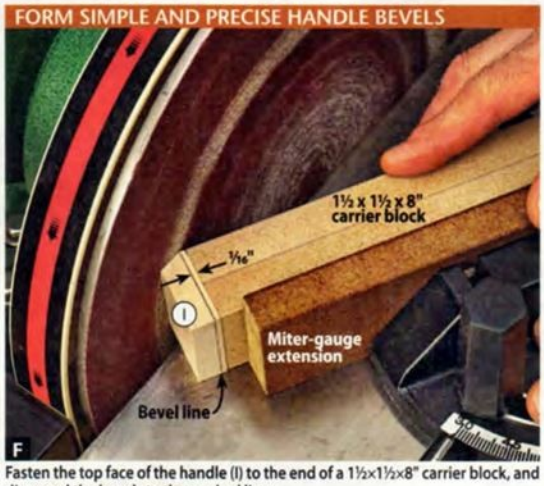
When covering a screwhead with a round plug, carefully matching the grain and color of the plug to the surrounding wood can make the plug nearly invisible. But just as often, what looks perfect in the raw emerges as an unsightly dot during finishing. Using a slightly protruding square peg in a contrasting wood species turns a cover-up into a design element.

In the usual method of drilling a round hole and squaring it with a chisel, the challenge is forming a clean-edged, perfectly square mortise. Using the lid panel (F) as an example, here's how to get flawless results.

Chuck a ⅜" Forstner bit into your drill press, and position the fence and a stopblock to center the bit on the peg (G) locations on the panel (F). Drill a ⅛"-deep hole at each corner, as shown *inset*. Remove the Forstner bit, and chuck a ⅜" hollow mortising chisel (the type made for a mortising machine) into the drill press, aligning the chisel edges with the panel edges. (Visit grizzly.com for an inexpensive ⅜" mortising chisel.) Lower the drill-press quill, as shown at *right*, driving the chisel into the wood ⅛" deep. Clean out the mortises with a ¼" hand chisel.

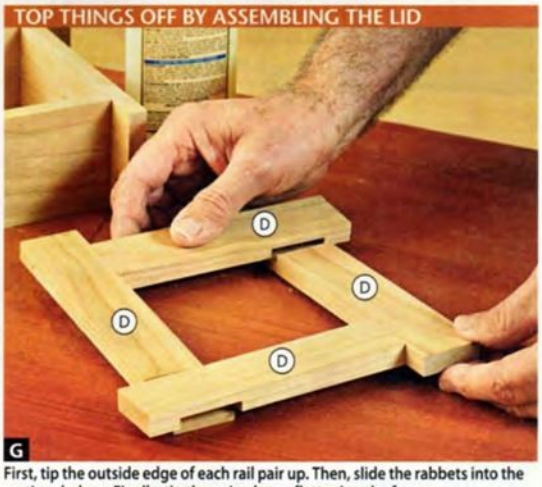


FORM SIMPLE AND PRECISE HANDLE BEVELS



Fasten the top face of the handle (I) to the end of a 1½×1½×8" carrier block, and disc-sand the bevels to the marked lines.

TOP THINGS OFF BY ASSEMBLING THE LID



First, tip the outside edge of each rail pair up. Then, slide the rabbets into the mating dadoes. Finally, tip the pairs down, flattening the frame.

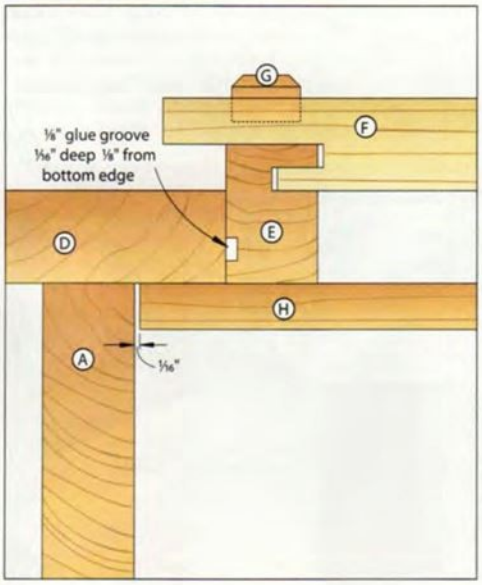
5 To form the overhanging edge of the panel (F) and the tongue that fits into the upper inside grooves on the risers (E) [**Drawings 5** and **6**], first cut a ¼"-deep saw kerf into the bottom face of the panel near each edge [**Drawing 7**, **Step 1**]. Then with the panel top face against the fence, cut a saw kerf into each edge [**Step 2**]. Make sure the tongue on the bottom face fits into the saw kerfs in the risers (E).

6 For the pegs (G), cut a ⅜×⅜×12" blank, testing it for a snug fit into the panel (F) mortises. Sand chamfers on both ends [**Drawing 8**, **Step 1**], and cut one peg from each end [**Step 2**]. Repeat to make a total of four pegs.

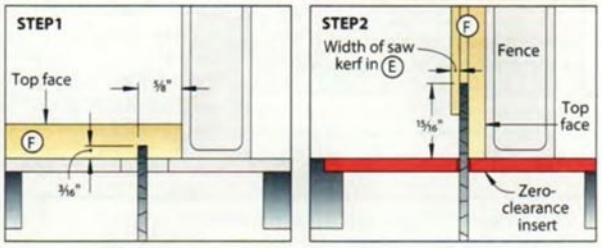
7 Cut a ¼×½×20" blank for the stops (H), and then cut the parts to length. Dry-assemble the stops in the bottom of the base to check for a total gap of 1/16" in each direction between the stop assembly and the sides (A).

8 Retrieve the handle (I) blank and cut it to size. Mark lines on the sides 1/16" from the top edge [**Drawing 5a**], and disc-sand the bevels [**Photo F**]. Finish-sand the handle.

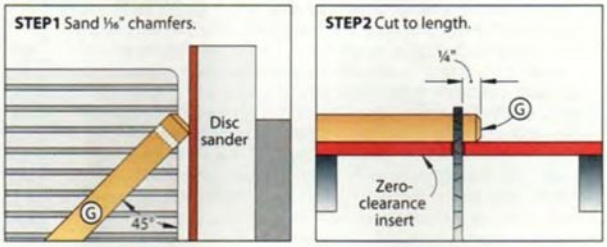
6 LID SECTION VIEW DETAIL

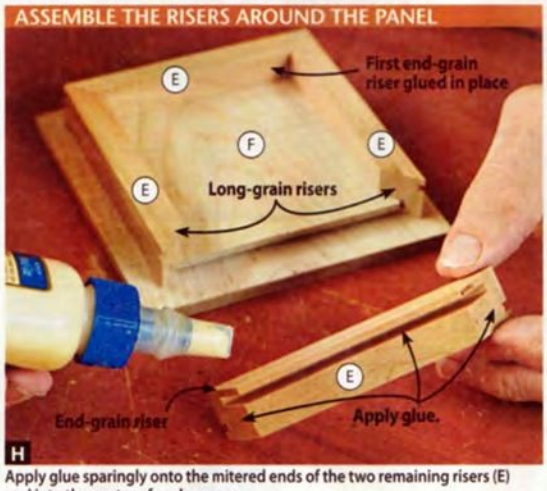


7 CREATING THE PANEL EDGE PROFILE

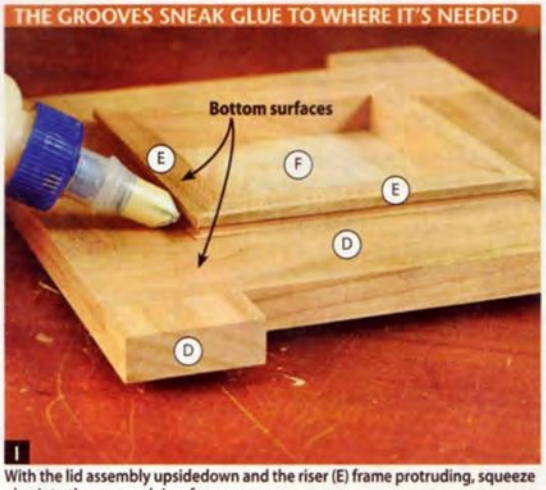


8 MAKING THE PEGS





Apply glue sparingly onto the mitered ends of the two remaining risers (E) and into the center of each groove.



With the lid assembly upsidedown and the riser (E) frame protruding, squeeze glue into the exposed riser frame grooves.

Assemble the lid

1 Glue and clamp the rails (D) in pairs. Make sure the rabbets face up, the dadoes down, and that the end offsets overhang the same sides as the base offsets [**Drawings 2** and **5**]. With the glued pairs dry, apply glue to the center of the exposed rabbets, and assemble the rail frame [**Photo G**]. Clamp the joints until the glue dries. Sand the joints smooth.

2 Slip two risers (E), without glue, onto the panel (F) long-grain tongues. Apply glue to the two remaining risers [**Photo H**], and slip them onto the panel end-grain tongues.

3 Immediately slide the riser (E) frame into the rail (D) frame from the top until the panel (F) seats onto the rails. Turn the assembly over and squeeze glue into the riser frame grooves [**Photo I**]. Then push the riser frame back into the rail frame until the riser frame and rail frame bottom surfaces are flush. Wipe away any excess glue with a damp cloth. Let the glue dry, and finish-sand the bottom surfaces.

4 Glue and clamp the stops (H) to the bottom of the rail (D) frame, centering the stop frame. Then glue the pegs (G) into the panel (F) mortises. Glue and clamp the handle (I) in place, centered on the panel.

Apply the finish

1 Inspect all the assemblies and finish-sand to 220 grit where needed.

2 Apply a clear finish. (To bring out the grain of the curly maple and the color of the cherry, we applied a coat of Minwax Antique Oil Finish, and let it dry for 24 hours. Then we topcoated the box with two coats of aerosol lacquer, sanding between coats with 320-grit sandpaper.)

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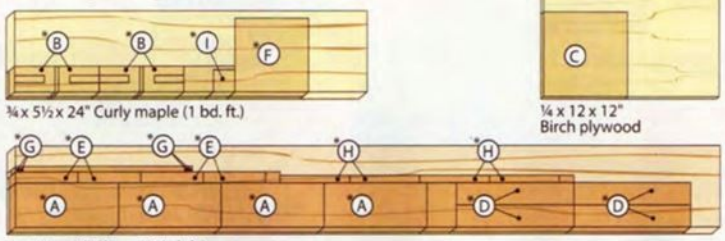
Project design: **Jeff Mertz**
Illustrations: **Roxanne LeMoine**

Cutting Diagram



¾ x 5½ x 24" Curly maple (1 bd. ft.)

¼ x 12 x 12"
Birch plywood

¾ x 5½ x 48" Cherry (2 bd. ft.)
*Plane or resaw to the thicknesses listed in the Materials List.

Materials List

		FINISHED SIZE T	W	L	Matl.	Qty.
Base						
A*	sides	½"	3"	7"	C	4
B*	feet	½"	1¾"	2¾"	CM	4
C	bottom	¼"	5⁹⁄₁₆"	5⁹⁄₁₆"	BP	1
Lid						
D	rails	½"	1½"	8"	C	4
E*	risers	½"	¾"	4¼"	C	4
F	panel	½"	5"	5"	CM	1
G*	pegs	⅜"	⅜"	¼"	C	4
H*	stops	¼"	½"	4⁹⁄₁₆"	C	4
I*	handle	½"	1½"	1½"	CM	1

*Parts initially cut oversize. See the instructions.

Materials key: C–cherry, CM–curly maple, BP–birch plywood.
Blade and bits: 3⁄16", ½", and 1" straight router bits; stack dado set; ⅜" Forstner bit.